

#### 5.10.1 Senior Review

Upon completing a mission's prime phase activity (Phase E), a mission may be eligible to continue its science program and extend its operations. There are several justifications that may be applicable for seeking approval for a mission extension. Among these may include that a mission extension is needed to complete the mission's Level-1 requirements or is justified as being in the best interests of the Nation and NASA. National interests may include the fact that the mission has become vital to the success of programs run by other Federal departments or agencies. An example may be the use of a mission's data in terrestrial or space weather predictions by the National Oceanic and Atmospheric Administration. In the case of NASA's best interest, a mission may be extended if its data are part of compelling and vital science investigations that contribute to achieving NASA's strategic goals. In all cases, the PE and PS for the operating mission will assemble a decision package for the director of the appropriate SMD division that will support the extended mission phase. Often the Senior Review process is an appropriate method for developing the inputs to such a decision package.

A Senior Review is conducted every two or three years in each of the major science research areas within SMD (specifically Astrophysics, Earth Science, Heliophysics, and when necessary, Planetary Science). The Senior Review is a science peer review that provides a comparison of the relative science values of a set of missions within an SMD science area or sub-area. The intent of the Senior Review process is to maximize the scientific return from these programs within finite resources. The Senior Review provides inputs toward "re-balancing" the elements of the MO&DA portfolio. (It is not a review leading towards the selection of new capabilities or research as is the case for solicited programs under NASA AOs and NRAs.) The SMD DD of the science area under review uses the evaluations and findings from these comparative reviews to define an implementation strategy and give programmatic direction to the missions and projects concerned for the next two to four fiscal years.

A Senior Review panel consists of senior scientists who are established and respected members of the particular science community served by the missions under evaluation. This panel will review and evaluate science proposals for extending missions that are either completing their prime-phase (Phase E) or were previously extended. The panel will rate the proposals as to scientific merit, based on their extended mission objectives and capabilities. The principal product from the Senior Review is the report written by the panel. The report represents the panel's consensus findings and evaluations for each of the submitted proposals as well as a ranked list of the projects based on the panel's assessment of the science value per dollar needed to extend the mission. Projects at the top of the list are likely to get funded; those at the bottom may be terminated. The SMD Science DDs draw the make or break line, based on available budget. The panel's report often provides inputs to a set of instructions that the DD will relay to the mission for the approved extension. These directives could include terminating one or more instrument

teams of the mission, providing priority on the elements of the mission's science plan, revised budgets for the mission's extended phase, etc.

If the outcome of a Senior Review or of other programmatic factors such as a significant budget reduction is that a project is not recommended for continued funding and therefore must be terminated, the PE develops a termination recommendation letter for SMD AA review and approval. (See Section 5.10.3, "The Termination Process.")